

## The Knowledge Bank at The Ohio State University

### Ohio State Engineer

**Title:** Auto Makes Good

**Creators:** Funston, Jane

**Issue Date:** 1940-02

**Publisher:** Ohio State University, College of Engineering

**Citation:** Ohio State Engineer, vol. 23, no. 3 (February, 1940), 6-7.

**URI:** <http://hdl.handle.net/1811/35672>

---

# AUTO MAKES GOOD

By JANE FUNSTON

Photos Courtesy of Packard Motor Car Co.

Several years ago, someone mentioned "Proving Grounds" to me. I didn't have the vaguest idea what it was all about. But now I know. My investigations have been confined to the Packard Motor Car Co., and I would like to take this opportunity to thank them for the use of the photographs and material.

A few motor car companies are without facilities for testing their products, but the majority of large companies are fully equipped. The phrase "Proving Grounds" is not an uncommon one in the world today, but just how many people realize what an extensive and well-organized project it is? Here is an example of the Packard Proving Grounds: it occupies an area

Fig. 1

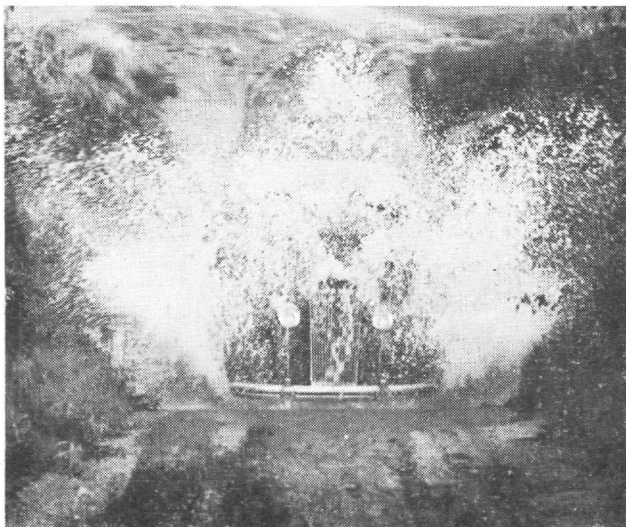


Fig. 2

of 504 acres; has a two and one-half mile speedway; miles of roads, good and bad; grades equaling those on the steepest mountain roads; sand pits, gumbo mud, and samples of every other kind of road condition a car might encounter. There is a trained personnel of more than fifty men variously classified as mechanics, drivers, inspectors, technicians, and engineers. The main building contains offices, garage accommodations for 30 cars, machine shop, tool room, dynamometer laboratory, and the instruments necessary to check accurately every part of an automobile. There is a timing stand at the entrance that is a miniature weather bureau. The concrete speedway men-

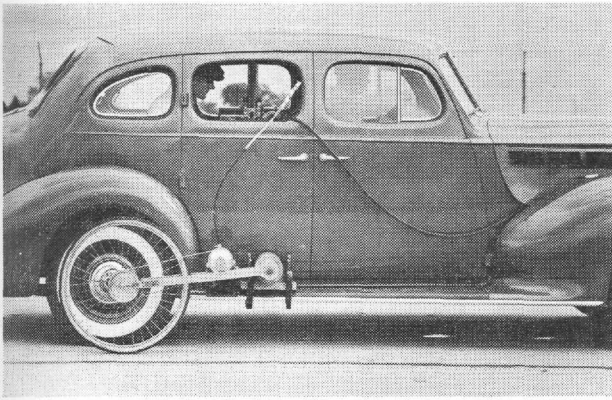


Fig. 3

tioned before is two and one-half miles in length and is fifty-five feet wide. Each straightaway is one-half mile long and each turn three-quarters of a mile. The turns are so scientifically constructed that a well balanced car will negotiate them perfectly without driver assistance.

All models are driven through a specially constructed water splash to determine whether the ignition can be drowned out and also to check the effectiveness of the dirt and water seals on the brakes (Fig. 1). Two sections commonly referred to as the Sahara Desert are composed of very fine sand. Cars are required to plow through this sea of sand axle deep for hours at a time. This test is terribly severe, and any weakness in any part of the power transmitting system is certain to result in failure in a very short time. The sand pit also tests traction and wheel dance. (Fig. 2).

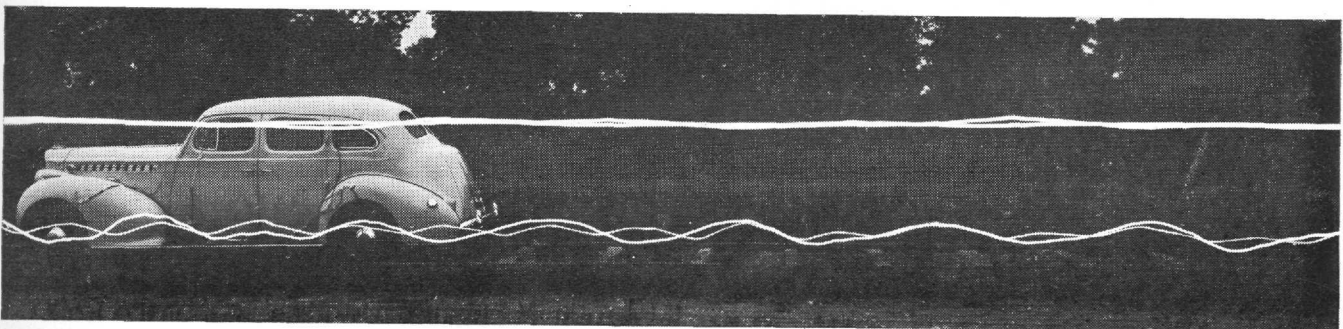
Figure 3 shows the gasoline economy test, the fifth wheel being used instead of the speedometer for accurate speed and mileage measurement. The car is run around the track until a measured amount of fuel is

The difference between a gentleman and a tramp is not the way he acts, but the way he is treated.

"I confidently expect that when we get where we are going, wages will be doubled in this country. My opinion is that the real American wage is to come. It will be created by management producing better goods at lower costs which will permit them to be sold to twice as many buyers at lower prices."

—Henry Ford.

Fig. 5



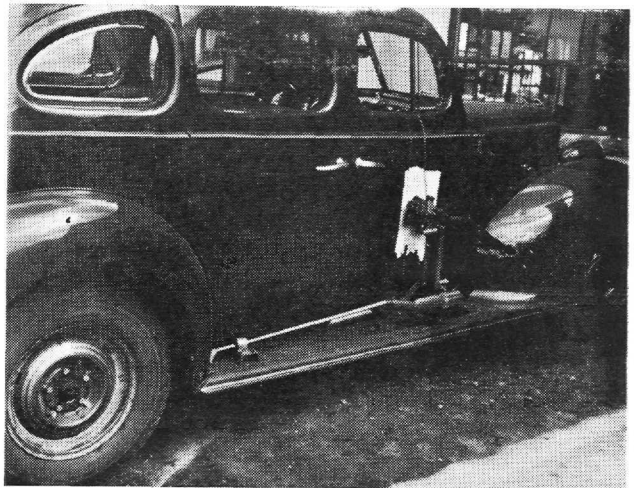
used up. It is run at various speeds, and then checked against the wind.

Figure 4 shows a setup for shooting the tires at high speed. This shows how a car will handle during a blowout. Both shotguns are operated from inside the car, and sometimes both guns are fired at the same time.

A good illustration of how well passengers ride is shown in Figure 5. Lights were mounted at the front and rear top, and on the front and rear wheels. The car was then driven over the ties of a railroad track at 40 M.P.H. The bottom lines represent the motion of the wheels, and the top lines the motion of the top of the car. This is a very good test for shock-absorbers and springs.

All this has been about Packards, but if taken generally, could probably apply to any other proving grounds owned by a motor car company. Many years and much money have been put into proving grounds and the results show efficient, well-managed, and well-organized associations.

Fig. 4



Wisdom thoroughly learned, will never be forgotten.  
—Pythagoras.

Here is a bridge: the sense perceives concrete and iron, but the mathematician sees, with the mind's eye, the daring and delicate adjustment of all this mass of material to the laws of mechanics and mathematics, and engineering; if the laws were violated, the bridge would collapse into the stream beneath; the laws are the God that holds up the bridge in the hollow of his hand.